

CHAPTER 136 APPROVAL OF PARACHUTE ALTERATIONS

Section 1 Background

1. PTRS ACTIVITY CODES

A. *Maintenance*: Pending

B. *Avionics*: Pending

3. OBJECTIVE. This chapter provides guidance and procedures for approval of parachute maintenance and alterations.

5. GENERAL. The regulatory basis for parachute equipment and jumping is FAR Parts 91 and 105.

A. Parachutes used in connection with civil aviation fall into two classes:

- Parachutes available for emergency use to evacuate aircraft in distress
- Parachutes used for intentional jumping as a sport, in exhibition, or in public service

B. This chapter addresses parachutes used for intentional jumping; however, alteration and airworthiness requirements for intentional jumpers' auxiliary (reserve) parachutes are the same as for any other parachute available for emergency use.

C. Advisory Circular 105-2, Sport Parachute Jumping, as amended, contains additional information about intentional parachute jumping and the equipment used by the intentional jumper.

7. PARACHUTE PACKS/CONTAINERS. FAR § 105.43 prescribes that no person may make a parachute jump from an aircraft unless that person is wearing a single harness dual parachute pack having at least one main parachute and one approved auxiliary parachute.

A. It is the usual practice of persons engaging in intentional parachute jumping to wear a dual parachute pack specifically designed and manufactured for that purpose, or an approved single parachute pack that has been altered to provide the attachment of an additional parachute.

(1) Modern sport parachute equipment, containing both main and reserve/auxiliary parachutes are worn in tandem fashion (one above the other) on the parachutist's back.

(2) The reserve parachute is housed in the upper container and the main parachute is housed in the lower container. Because the harness and container system is one unit, any change or alteration to the main container could affect the operation of the auxiliary/reserve container and should be considered major.

B. The entire auxiliary (reserve) parachute assembly, including the harness, must meet the airworthiness requirements (TSO C-23) for emergency parachutes. The parachute must be maintained in its originally approved or properly altered condition.

C. FAR §§ 91.307(e) and 105.43(d) contain definitions of an approved parachute. An approved alteration of a parachute does not affect its acceptability for the purposes of FAR § 105.43.

D. The main parachute of a single harness dual parachute pack, including the portions of the attachment links, snaps, or quick-release fittings attached to the canopy, does not require approval.

9. ALTERATION OF THE AUXILIARY PACK/CONTAINER

A. The auxiliary pack includes the canopy, lines, risers, attaching hardware, ripcord, container, bridle, and pilot chute.

All components of the approved auxiliary parachute must meet all the airworthiness and performance standards as stipulated in TSO C-23. Auxiliary parachutes may be altered only as specifically authorized by the Administrator or the manufacturer (FAR § 65.129(d)).

B. Examples of alterations made to the auxiliary pack include:

- Addition of a deployment “diaper”
- Moving of the chest strap up or down for parachutist’s comfort
- Installation of an automatic activation device (AAD)

Note: Automatic opening device (AOD) is an old term that was changed from AOD to AAD due to legal action.

- Changes in the method of folding or stowing the canopy or lines in the container

11. ALTERATION OF THE HARNESS

A. Good workmanship and close adherence to approved data are critical considerations in the approval of harness alterations.

B. Although it is used to attach both parachutes to the wearer, the harness is considered to be part of the auxiliary parachute. The chrome plating of load-carrying harness fittings may cause hydrogen embrittlement and subsequent failure under stress unless the plating is properly done. Additionally, plated adjustment hardware may have a smoother finish than the original and may permit slippage.

13. ALTERATION OF THE MAIN PARACHUTE

A. The main parachute of a dual parachute pack to be used for intentional jumping may be altered by a master parachute rigger, the manufacturer, or any other manufacturer the Administrator considers to be competent. The alterations are not required to be made in accordance with

approved manuals and specifications (reference FAR § 65.125(c)). Master parachute riggers are not required to comply with FAR §§ 65.127 through 65.133 (relating to facilities, equipment, performance standards, records, recent experience, and seal) when altering the main parachute.

B. Any change to the configuration, method of operation, or method of packing the main parachute, up to and including the main canopy attachment links or the male end of the quick release fittings, is a main pack alteration. Any main parachute alteration that affects the strength or operation of the auxiliary parachute, including the harness, must be regarded as an alteration of the auxiliary parachute and handled accordingly.

15. DATA APPROVAL BY AVIATION SAFETY INSPECTORS (ASIS). The ASI should have either a rigger certificate or parachute experience prior to providing field approval services. An ASI with questions about the performance or airworthiness of a parachute alteration that cannot be resolved through the ASI’s own technical knowledge and experience should accomplish at least one of the following:

- Require a strength or breakdown test of an individual unit (if strength is in question)
- Require a drop test of an identical unit (TSO C-23 and FAR § 149.23(c) and (d) may be used as guides)
- Consult other regional or district office personnel with appropriate technical knowledge and experience
- Refer the alteration data to the appropriate regional engineering segment

17. HANDLING PARACHUTE ALTERATION DATA

A. The applicant should submit a letter for data approval along with substantiating data to the district office. The data should include:

(1) A clear description of the alteration, the method of complying with approved data such as a reference to the applicable sections of a military specification or TSO, when applicable

(2) Drawings, sketches, or photographs, if necessary

(3) Information such as thread size, stitch pattern, materials used, and location of altered components

(4) Some means of identifying the altered parachute (model, serial number, etc.)

B. When approved, the letter should be signed, dated, stamped with the district office identifier and returned to the applicant. If the data is not acceptable, return the entire file to the applicant and specify the reasons for rejection.

C. If the letter is reviewed by the regional office for approval, it should be returned to the applicant through the originating district office.

D. The district office is not responsible for the evaluation or approval of requests made directly to the parachute manufacturer for approval of alterations.

19. ASSEMBLY OF MAJOR PARACHUTE COMPONENTS

A. Assembly or mating of approved parachute components from different manufacturers may be done without further authorization from the manufacturer or the FAA. The original assembly should be made by a parachute rigger or parachute loft who will ensure that each component of the assembly functions properly and does not interfere with the operation of the other components.

B. The user of a single harness dual parachute pack may perform simple assembly operations necessary for transportation, handling, or storage between periods of use if the parachute is clearly designed to facilitate such assembly and disassembly without the use of complex operations.

Section 2 Procedures

1. PREREQUISITES AND COORDINATION REQUIREMENTS

A. Prerequisites

- Knowledge of the regulatory requirements of FAR Parts 65, Subpart F, 105, and 149
- A parachute rigger certificate or parachute background prior to be able to grant data approval

B. *Coordination.* This task may require coordination with other Airworthiness Aviation Safety Inspectors (ASIs).

3. REFERENCES, FORMS, AND JOB AIDS

A. References

- Advisory Circular 105-2, Sport Parachute Jumping, as amended

B. *Forms.* None.

C. *Job Aids.* None.

5. PROCEDURES

A. *Inspect Auxiliary Parachute.* Ensure that the entire auxiliary (reserve) parachute assembly, including the harness, meets the airworthiness requirements for emergency parachutes.

(1) Ensure that the parachute is maintained in its originally approved or properly altered condition. An approved alteration of a parachute does not affect its acceptability for the purposes of FAR § 105.43.

(2) Ensure that the canopy, lines, risers, attaching hardware, ripcord, container, and pilot chute components of the approved auxiliary parachute meet all the airworthiness and performance standards of the pertinent FAR.

(3) Handle any main parachute alteration that affects the strength or operation of the auxiliary parachute, including the harness, as an alteration of the auxiliary parachute.

B. Approve Alteration. For questions about the performance or airworthiness of a parachute alteration that cannot be resolved through the ASI's own technical knowledge and experience on parachute construction, accomplish at least one of the following:

- Require a strength or breakdown test of an individual unit (if strength is in question)
- Require a drop test of an identical unit (TSO C-23 may be used as a guide)
- Consult other regional or district office personnel with appropriate technical knowledge and experience
- Refer the alteration data to the appropriate regional engineering segment

C. Accept Parachute Alteration Data. Have the applicant submit a letter for data approval along with substantiating data to the district office. The data should include:

(a) A clear description of the alteration, the method of complying with approved data such as a reference to the applicable sections of a military specification or TSO, when applicable

(b) Drawings, sketches, or photographs, if necessary

(c) Information such as thread size, stitch pattern, materials used, and location of altered components

(d) Some means of identifying the altered parachute (model, serial number, etc.)

7. TASK OUTCOMES

A. File PTRS Transmittal Form

B. Completion of this task will result in the following actions:

(1) For an approval; sign, date, and stamp the letter with the district office identifier, and return it to the applicant

(2) For a disapproval; return the entire file to the applicant and specify the reasons for rejection

C. If the letter was reviewed by the regional office for approval, it should be returned to the applicant through the originating district office.

9. FUTURE ACTIVITIES. Routine surveillance.